

DEC 17 2007

AMENDMENT UNDER 37 C.F.R. 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 2836
PATENT
APPLICATION 10/659,202
ATTORNEY DOCKET 2003P08454US (1009-346)

AMENDMENTS

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A temperature compensated current sensor for a circuit protection apparatus comprising:
a circuit protection device for coupling adapted to be operatively coupled to a powered circuit having current flowing therein;
a bus for carrying the adapted to carry power therethrough;
a sensing resistor electrically coupled to the bus, for sensing the sensing resistor adapted to provide a signal indicative of current flow through the bus;
temperature sensitive compensation circuit electrically coupled to the sensing resistor, for compensating the temperature sensitive compensation circuit adapted to attenuate the signal indicative of current flow through the bus ambient to a temperature compensated signal; and
an output for reading the current an arc fault determination circuit adapted to determine an arc fault based upon the temperature compensated signal.
2. (Currently Amended) The apparatus of claim 1, wherein the arc fault determination circuit protection device comprises is an ASIC circuit.
3. (Currently Amended) The apparatus of claim 1, wherein the circuit protection device comprises an operational amplifier, the operational amplifier adapted to amplify the signal indicative of current flow through the bus or the temperature compensated signal.
4. (Original) The apparatus of claim 1, wherein the temperature sensitive compensation circuit comprises at least one thermistor.

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5. (Currently Amended) The apparatus of claim 4, wherein the at least one thermistor is positioned between the sensing resistor and ~~an ASIC~~the arc fault determination circuit.
6. (Original) The apparatus of claim 4, wherein the at least one thermistor is linear.
7. (Original) The apparatus of claim 4, wherein the at least one thermistor is ceramic.
8. (Original) The apparatus of claim 4, wherein the at least one thermistor is a PTC thermistor.
9. (Original) The apparatus of claim 4, wherein the at least one thermistor is a NTC thermistor.
10. (Currently Amended) A sense resistor apparatus for providing a temperature independent current signal at varying ambient temperatures, comprising:
a sense resistor adapted for sensing a current passed through the sense resistor and adapted for generating a voltage signal; and
at least one thermistor adapted for thermally compensating the voltage signal generated through the sense resistor; and
an arc fault determination circuit adapted to receive a temperature compensated voltage signal from the at least one thermistor, the circuit adapted provide a signal to trip a circuit breaker responsive to responsive to a determination of an arc fault by the circuit, the determination of the arc fault based upon the temperature compensated voltage signal.
11. (Currently Amended) The apparatus of claim 10, wherein the at least one thermistor is positioned between the sense resistor and ~~an ASIC~~the circuit.
12. (Original) The apparatus of claim 10, wherein the at least one thermistor is linear.

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13. (Original) The apparatus of claim 10, wherein the at least one thermistor is ceramic.
14. (Original) The apparatus of claim 10, wherein the at least one thermistor is a PTC thermistor.
15. (Original) The apparatus of claim 10, wherein the at least one thermistor is a NTC thermistor.
16. (Currently Amended) An apparatus for thermally compensating a voltage signal for an AFCI circuit, comprising:
 - | a sense resistor adapted for sensing a current passed through the sense resistor and generating the voltage signal;
 - | at least one thermistor adapted for thermally compensating the voltage signal generated through the sense resistor; and
 - | an operational amplifier adapted for conditioning a thermally compensated voltage signal before the thermally compensated voltage signal enters a detection circuit of an arc fault circuit interrupter device.
17. (Original) The apparatus of claim 16, wherein the detection circuit comprises an ASIC circuit.
18. (Currently Amended) The apparatus of claim 16, wherein the at least one thermistor is positioned between ~~a-the~~ sense resistor and ~~the-an~~ ASIC circuit.
19. (Original) The apparatus of claim 16, wherein the at least one thermistor is ceramic.
20. (Original) The apparatus of claim 16, wherein the at least one thermistor is linear.

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21. (Original) The apparatus of claim 16, wherein the at least one thermistor is a PTC thermistor.
22. (Original) The apparatus of claim 16, wherein the at least one thermistor is a NTC thermistor.
23. (Currently Amended) A method for translating a current signal into a temperature compensated voltage signal for an AFCI circuit, comprising:
generating a voltage signal by passing the current signal through a sense resistor;
applying the voltage signal through at least one thermistor to generate a thermally proportional voltage signal;
amplifying the thermally proportional voltage signal by energizing an operational amplification circuit; and
~~tripping a circuit breaker based upon a determining whether a detection circuit of an determined arc fault circuit interrupter device detects the arc fault determined based upon the thermally proportional voltage signal.~~
24. (Currently Amended) The method of claim 23, wherein ~~the detection circuit is an ASIC circuit determines the arc fault.~~
25. (Currently Amended) The method of claim 23, wherein the at least one thermistor is positioned between the sense resistor and ~~the an ASIC circuit that determines the arc fault.~~
26. (Original) The method of claim 23, wherein the at least one thermistor is linear.
27. (Original) The method of claim 23, wherein the at least one thermistor is ceramic.

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28. (Original) The method of claim 23, wherein the at least one thermistor is a PTC thermistor.
29. (Original) The method of claim 23, wherein the at least one thermistor is a NTC thermistor.
30. (Currently Amended) A method for thermally compensating a voltage signal, comprising:
generating the voltage signal by passing a current signal through a sense resistor;
and
applying the voltage signal through at least one thermistor to generate a thermally proportional voltage signal, the voltage signal provided to an arc fault determination circuit adapted to determine an arc fault based upon the thermally proportional voltage signal, the circuit adapted to cause a circuit breaker to trip responsive to the arc fault
31. (Previously Presented) The method of claim 30, wherein the at least one thermistor is linear.
32. (Original) The method of claim 30, wherein the at least one thermistor is a PTC thermistor.
33. (Original) The method of claim 30 wherein the at least one thermistor is a NTC thermistor.
34. (Currently Amended) A method for thermally compensating a current sensor for a circuit protection apparatus comprising:
coupling a circuit protection device to a powered circuit having current flowing therein; coupling a bus adapted for carrying the power therethrough;

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electrically coupling a sensing resistor to the bus, the sensing resistor adapted for sensing current flow through the bus;

coupling a temperature sensitive compensation circuit to the sensing resistor, the temperature sensitive compensation circuit adapted for compensating ambient temperature; and

coupling an arc fault determination circuit to the temperature sensitive compensation circuit, the arc fault determination circuit adapted to cause a circuit breaker to trip responsive to an arc fault determination, the arc fault determination based upon reading an output of the current temperature sensitive compensation circuit.

35. (Currently Amended) The method of claim 34, wherein the circuit protection device arc fault determination circuit comprises an ASIC circuit.
36. (Currently Amended) The method of claim 34, wherein the circuit protection device arc fault determination circuit comprises an operational amplifier.
37. (Original) The method of claim 34, wherein the temperature sensitive compensation circuit comprises at least one thermistor.
38. (Currently Amended) The method of claim 37, wherein the at least one thermistor is positioned between the sensing resistor and the ASIC arc fault determination circuit.
39. (Original) The method of claim 37, wherein the at least one thermistor is linear.
40. (Original) The method of claim 37, wherein the at least one thermistor is ceramic.
41. (Original) The method of claim 37, wherein the at least one thermistor is a PTC thermistor.

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42. (Original) The method of claim 37, wherein the at least one thermistor is a NTC thermistor.